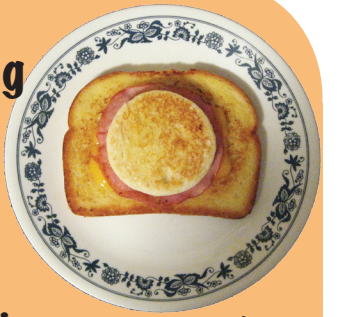


ORE THE DIGGER NEWSPAPER

Volume 89, Issue 17 February 16, 2009

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FLOBOTS to headline at E-Days concert

Tim Weilert
E-days Committee

"There is a war going on for your mind" are the socially-conscious lyrics that open the Flobots debut album **Fight With Tools**. While most bands are content to simply play music, Denver's own Flobots have used their breakthrough national success and unique sound to entertain and challenge listeners.

The Flobots formed in 2005. In the midst of the previous year's election frenzy, childhood friends James Laurie (aka Jonny 5) and Brer Rabbit teamed up with Mackenzie Roberts, integrating live hip hop with a passion for voter engagement. Andy Guerrero, then the front man for local funk band Bop Skizzum, convinced the trio to add live instrumentation, and the current incarnation of Flobots was born.

In the years since, Flobots man-

aged to connect the Denver music scene with non-profit organizations and promote social issues. However, not all of the Flobots fame has been due to their message; they also possess a unique and fresh sound. Building on a mixture of hip-hop and rock, the Flobots infused their sound with viola and horns, achieving something truly original.

For the reader who is still saying "Flo-who?" simply turn on the radio. Their single "Handlebars" hit the Denver scene in 2005, has since seen airplay in all major U.S. markets, and done incredibly well



on the Billboard music charts. The Flobots have even performed this tune on *The Tonight Show with Jay Leno*.

While recent years of E-Days concerts have seen the likes of Flogging Molly and Goldfinger, this

year's show will appeal to anyone who wants to hear "the next big thing." Even if hip-hop isn't your thing, Flobots will surely put on an entertaining and thought-provoking show that should appeal to any Mines student.



IMAGES COURTESY FLOBOTS

Filthy T will be
opening for the
Flobots

turn to page 4 for more
information

ISEE has a blast

Benjamin Goertz
Staff Writer

Last Wednesday, members of the Mines chapter of the International Society of Explosive Engineers (ISEE) welcomed members of the organization from around the world visiting the school for a tour and a blasting demonstration. The members were finishing up their time at the 35th Annual Conference on Explosives and Blasting Technique held in Denver during February 8-11.

The conference contained technical presentations, hands-on explosive demonstrations, and speakers from various companies worldwide dealing in the mining and explosive engineering sectors. The visit to CSM, which had a wait list by the first day of the conference, was the final event scheduled and lasted for 6 hours.

The visit was organized by the Mines chapter president, Chris Harper, chapter vice president, Miles Parker, and the mining department of Mines. "Between school and trying to set this up, it was very stressful, but [we] were able to pull things off," said Harper.

The visit began with an introduction from CSM Alumnus and former Board of Trustees member Hugh Evans, and continued with a presentation from the president of the Colorado chapter of ISEE, Mr. Falsal Hashem. Hashem described this visit "not as School of Mines wanting to show anything to the world so much as the world want-

ing to look at School of Mines." Hashem emphasized how Mines is a focal point in mining engineering and a leader in new techniques in the industry.

The last speaker, Steven Liu, demonstrated the achievements the school's explosive group, AXPRO, has made in the past few years and concluded the presentation by thanking everyone for visiting. Afterwards, Harper and Parker led the group on a tour of the campus before busing the members to Edgar Mine in Idaho Springs.

At the blasting site above Edgar Mine the group was shown how the school was testing new methods of explosive engraving. Vilem Petr, the technical director of explosive activities, created a demonstration to imprint tree leaves onto a metal plate by using the blast wave from the explosion.

Petr and Doug Ahou, the lab coordinator for mining, set the charge off remotely and gave the crowd a beautiful demonstration. Gilles Gomez, a manager for a cement and mining company in France and lifetime member of ISEE, said he was excited about the blast and was "very happy to visit a mining school and see what everybody [does] in blasting and new technology."

Like Gilles, members were from regions such as France, Brittan, Australia, South Africa, Brazil, India, China, and the Netherlands, ranging from mining engineers to explosive experts.

Faculty Senate discusses plus/minus

Ian Littman
Assistant Business Manager
for Web Content

The Mines faculty senate held a discussion that largely rested upon the controversial implementation of a plus-minus grading system for undergraduate students at Mines. The Tuesday afternoon meeting brought a roughly equal proportion of faculty senators and Mines students. Among the attendees of the optional meeting were Dr. Arthur Sacks and James V. Jesudason on the senate side and Associated Students of the Colorado School of Mines (ASCSM) President Kevin Duffy for the students. Dr. J. Thomas McKinnon presided as moderator and served as somewhat of a liaison between students and senators.

After a short amount of discussion, the senate, whose attendees numbered ten at the meeting, determined that an A through D- scale would be implemented at the very least, rejecting the compromise that would have rendered C-, D+, and D- grades nonexistent. Dr. McKinnon brought up the concept of an A+ grade to offset the system's A-, an amendment also championed by students in attendance. He was, however, the only faculty senator in favor of this amendment at the time, though the senate said they would seriously consider a proposal from the student body if it had supporting data alongside. A suggestion for an F+ grade by a faculty senator was laughingly dismissed on the grounds that "a fail is a fail," some

senators joked that an F-, below zero points, would then have to be implemented. A more serious opposition was that such a grade level would possibly necessitate a system with an E, something that would be of the utmost awkwardness.

The meeting then moved to implementation of a plus-minus system, with a focus on transparency to students and ease of implementation to the registrar. Two proposals were made for the switch-over. The first was a straight switch of all grading systems in the fall semester of 2012. The second was a tiered system in which 100-level courses would be switched to plus-minus in fall of 2009, 200-level courses in 2010, 300-level courses in 2011, and 400-level courses in 2012. The net effect of the second system would be to effectively segregate the plus-minus system by year of graduation, subject to normal graduation schedules. The disadvantage of the second system, however, was that the implementation of plus-minus grading on a per-class basis would be effectively on the honor system; due to the lack of fine-grained control in the registrar's systems, a professor could easily switch to plus-minus grading by accident or otherwise before the agreed-upon switch date.

After an interjection by Kevin Duffy that the student body was not in favor of plus-minus grading for **any** student regardless of entrance or graduation year, a straw vote was taken regarding the compet-

ing methods of plus-minus implementation. The results were 8-1 in favor of the "all at once" Fall 2012 phase-in with one senator abstaining on the grounds that he did not want the plus-minus system at all. Another faculty senator brought up Mines' current course grandfather clause, which states that a Mines student may, if he so chooses, override current course requirements for a degree with those in effect when he started the degree. This policy, the senator argued, could be extended to plus-minus grading. Dr. McKinnon replied that, after consulting with the Mines legal team, the school had concluded such a grandfather clause was not absolutely necessary.

Further provisions mentioned were notification of the Undergraduate Council of the modified system (determined to be a courtesy-only gesture, as the Faculty Senate outranks that organization) and notification of the plus-minus change to students and transcript viewers. The senate concluded that incoming students would be notified of the change in the student bulletin and recommended that the current student body submit a note (which is already in progress) regarding transcript explanations to the registrar, lest the organization overlook the rather standard procedure.

Stay tuned for the date, time and place of the next Faculty Senate meeting, at which senators will vote in earnest about the plus-minus grading system for undergraduate students, among other matters.

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Scientific discoveries this week

Jake Rezac, Content Manager

New York, New York. Scientists at the Albert Einstein College of Medicine of Yeshiva University have created a new technique to destroy cancer and HIV-infected cells. The technique, called radioimmunotherapy or RIT, selectively delivers radiation to infected cells with the intent of destroying them. This technique is an improvement on existing forms of radiation therapy, which cannot specify the cells being destroyed. Researchers hope their research will pave the way for new, significantly more effective, therapy techniques for cancer and HIV patients.

Leipzig, Germany. Anthropologists have finished sequencing the genome of the Homo Sapiens genetic relative Homo neanderthalensis. The Neanderthal, as it is often called, has been extinct for 25,000 years and this marks the first occasion an extinct animal's genome has been sequenced. The genome was found by analyzing body parts of the 38,000-year-old fossilized remains of a Neanderthal specimen found in Croatia's Vindija cave. Analysis of the DNA sequence is hoped to reveal if humans and Neanderthals ever mated; preliminary evidence suggests no.

Baltimore, Maryland. Medical researchers have sequenced the genetic code of the common cold, hoping to provide its first effective treatment. Scientists say the common cold, or human rhinovirus, can trigger asthma in teens, along with the obvious symptoms associated with the illness. Researchers hope that the now-complete information on the genetic composition of the cold will allow anti-viral drugs to be created which will fight the cold.

Harwell, Oxfordshire, UK. Researchers at Keele University have pioneered a new technique which could detect Parkinson's disease earlier than was previously possible. The technique uses a synchrotron, also known as a Diamond Light Source, which is a particle accelerator the size of five soccer fields. It focuses particles to a single beam, which researchers use to measure iron levels in individual brain cells, whose absence is a symptom of Parkinson's disease. By catching the disease early, scientists hope to prevent the most serious symptoms of the disease.

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Headlines from around the world

Emily Trudell, Staff Writer

Michelle Obama became the second first lady in U.S. history to appear on the cover of **Vogue magazine**, establishing her place as the America's newest fashion icon. While Vogue has photographed nearly every first lady since 1929, Hilary Clinton was the only other to appear on the cover. Jeremy Lusk, an American **motocross gold medalist**, died two days after suffering severe head injuries while attempting to land a back flip during a competition. Lusk was 24 years old.

The House approved the new **stimulus package** in a vote of 246-183, and the **\$787 billion** bill also passed in the Senate by 60-38. David Axelrod, the White House senior advisor, has emphasized that the stimulus will take time to "show up in the statistics... it's going to get worse before it gets better."

49 passengers and one person on the ground were killed when a **commuter plane** crashed into a home near Buffalo, New York. Officials say that there was a significant ice build-up on the windshield and wings of the plane.

After reports that **North Korea** has plans to prepare a long range missile test, **Secretary of State Hilary Clinton** made her first major speech, urging North Korea not to take such "provocative" measures.

Police in southern **Australia** have arrested a man in connection to the arson that caused the fires killing at least 181 people, displacing 7,000 people and burning over 1,800 homes.

Researchers have found that

babies who convey their thoughts using **gestures** by the age of 14 months develop larger vocabularies by the time they reach four and a half years old.

Nadya Suleman, mother of the newborn octuplets as well as six other children, has launched a new website to raise money to raise her fourteen children. All of the children were conceived by in vitro fertilization, prompting an ethics argument among fertility specialists.

Twelve drug company workers in Nigeria have been arrested on charges of tainting a teething medication

with **antifreeze** after 84 children and babies died as a result of the chemical. The suspects could face up to 15 years in prison.

A United States commercial satellite collided with a Russian communications satellite, creating a large cloud of debris at an altitude of five hundred miles over **Siberia**.

Chicago, Madrid, Rio de Janeiro, and Tokyo submitted their bids to the **International Olympic Committee** for the 2016 Games. The final announcement will be made in Denmark on October 2 of this year.

Venezuelans went to the polls on Sunday to vote on a referendum that would allow **Hugo Chavez** to run for a third term. The president is limited to two six-year terms. This is the second time Chavez has tried to have this changed.

Pakistani officials worked out a peace deal with insurgents linked to the Taliban, prompting a 10-day ceasefire in the Swat valley.



Mines offsets discrimination with Safe Zone

Keegan Whisler
Staff Writer

What is Safe Zone? Simply, it is a gathering of many different individuals who share the same goals: getting questions answered, finding support, and dealing with discrimination. The Safe Zone meeting last Monday was a gathering of progressive, responsible and respectable individuals. Sigma Lambda took the time to see that the students get their questions answered by setting up the informational session.

The purpose of Safe Zone was to present a comfortable and supportive atmosphere where people could get their questions



This symbol identifies someone with information, sensitivity and understanding towards lesbian, gay, bisexual and transgender issues.

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answered, whatever those may be, regarding GLBT issues. GLBT stands for Gay, Lesbian, Bi-sexual and Transgender.

For those who do not know, GLBT discrimination has become an important topic on campuses nationwide, and represents the number one reason for verbal attacks on GLBT-identified individuals. Part of the information presented at the last Safe Zone session was to inform the general student public that misunderstanding, or lack of communication, is no excuse for discrimination.

Ed Garton, the Director of GLBT Student Services at the Auraria Campus, came to Mines as part of the Safe Zone course. Garton

joked that the title is "the longest name ever!"

According to Garton, "Society at large does not understand GLBT issues." The comment was not intended to place blame on anyone directly, it was simply to catch the attention of those who unknowingly discriminate.

Garton continued by explaining, "[As a society], we like things to be one or the other," not allowing for a middle ground.

Campuses nationwide are attempting to reverse the harm that society has collectively taught its patrons to dispense. Societal norms tend to force labels upon those who do not necessarily define themselves by those labels. Everyone agrees that discrimina-

tion of any type is no longer acceptable in this day and age, yet society still paints a picture of the 'normal population versus the acronym population' although this is clearly not the case.

The best thing to do to end the discrimination is to be open and understanding, to discuss it with those associated.

In Garton's view, "majorities never define themselves; they only define what they are not."

Individuals associated with GLBT issues gave their own views on how CSM handles these situations. Sigma Lambda president Andrew Aschenbrenner briefly explained, "I don't see it as being an issue out loud, it's not really public...there's fear and then there's misunderstanding. I wish there was more of a dialogue. You can't answer questions when no one asks them."

Many who associate with GLBT issues debate how to explain: do they make it simple and give in to the same labels that frustrate their efforts against discrimination when that is not all of who they are? Or do they give a long lecture to elaborate on every aspect? This is where those not well versed with GLBT issues can help end the discrimination by being supportive and asking honest, yet respectful questions. The best thing to do to end the discrimination is to be open and understanding, to discuss it with those associated.

Safe Zone informed individuals that many genders exist and furthered the idea that a gender is a social construct. Simply, it is a person's feeling or beliefs not the physical attributes of their body that defines their sexuality.

You can ask further questions from Ed Garton, at Garton's confidential email, info@glbtss.org

Metals behaving strangely

Erik Lord
Staff Writer

"There are many reasons to study actinides," explained Dr. John Wills. "[Although] the primary motivation is their use in nuclear weapons and reactor fuels because they fission... their electronic structure properties are just as fascinating." Wills spoke Tuesday to a captive audience in Meyer Hall during his Physics Colloquium seminar entitled "Electronic Structure Theory for Actinide Elements and Compounds."

Wills began by explaining the unusual properties of the actinides, specifically those of the transuranic metal, plutonium. "The electronic properties of plutonium are extremely interesting and difficult to explain," he stated. "And it all comes from a balance of electrons not being able to decide whether they want to behave like bonding electrons or itinerant electrons."

The unique electrons he referred to were the 5f electrons. They are characteristic of actinides and increase in number across the series of heavy elements beginning with actinium, which has an atomic number of 89. The measured energies of these f-orbital electrons have been shown to be very similar to those of the s, p, and d orbital electrons and these overlapping band energies lead to a metal with material properties that are very sensitive to perturbations.

"The [actinide] crystal structures are like no other structures found in the periodic table," he said. "Uranium and plutonium have low symmetry crystal structures at their ground states." This result was unusual to actinide pioneers, considering most materials energetically favor more symmetrical crystal structures in their room-temperature phases, such as body-centered cubic.

Even more confounding were the drastic changes these materials exhibited when subjected to changes in chemistry, temperature, and pressure. "For plutonium, the crystal structures become simpler [with increasing temperature], but you also get a drastic volume change," Wills explained. "The expansion in volume from alpha-phase plutonium to delta-phase plutonium is 25

percent over a range of just 600 K... In terms of bonding [this requires] a huge energy in these electrons. This points to something strange going on."

These unusual electronic behaviors have made plutonium one of the most interesting materials to study. This work has progressed significantly thanks to the research conducted by the Theoretical Division of Los Alamos National Laboratory in New Mexico, where Dr. Wills is the Group Leader. His group, designated "T-1," is officially responsible for "Chemistry and Physics of Materials."

Much of the research conducted by Wills and his associates involves complex mathematical modeling of electronic structures of the actinides using electron density functional theory (DFT). He has used such modeling to describe the unusual behavior of actinides in terms of electron energy bandwidths.

One significant observation Wills made was the relationship between the electron energy bandwidth and the density of states at the Fermi energy. "You have to have a large density of states at the Fermi energy in order to compensate for the electrostatic energy of the structure." Also, he showed that once this energy is overcome, there can be significant structural reordering. This situation existed for plutonium and the other light actinide elements. The narrow, near-zero energy bandwidth resulted in an electronic

structure that was unstable against distortion. "Therefore, low symmetry crystal structures [exist] in the actinides," he continued.

To better understand the underlying mechanism, Wills investigated the behavior of simple and transition metals at electron energy bandwidths comparable to those found in the actinides. It was expected that similar bandwidths should result in similar crystal structures, and should not be dependent upon the electron character. "For the same bandwidth as plutonium [in its monoclinic alpha phase], aluminum preferred the orthorhombic structure of gamma-plutonium."

So why didn't the other metals behave the same way? "The [electrons of the] actinides are more localized," Wills explained. "There isn't enough localization [in the transition metals] for structural distortions to occur," Wills said. He explained the actinides exhibit this narrowing of the electron energies due to their f electrons overcoming the angular momentum barrier.

Understanding the material behaviors of actinide elements like plutonium has been shown to be a daunting task, thanks to localized electron behavior. But Dr. John Wills was one of the pioneers to publish research on computation determination for electronic behavior of plutonium. He continues to serve the Theoretical Division of Los Alamos in progressing our understanding of these unusual metals.



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Beer Review: Samuel Smith India Pale Ale

Akira Rattenbury
Staff Writer

Beer is scary if you don't check your expectations at the door. Many styles are disguised as blends, hybrids, and notorious diversions from traditional varieties. For instance, the modern American Pale Ale (APA) is hopped liberally with a variety of hops strains not common around the world. Notably, Cascadian hops add a sweet, bitter ester not typical of its namesake from yesteryear.

India Pale Ales (IPA's) found their heart early in the 18th and 19th century as a style critical to the transport of sudsy brews to the British colonies. Imperialism by wind-powered ships demanded a beer which could withstand lengthy journeys by boat.

The British wanted colonial troops to remain happy. Beer was therefore necessary. However, sailing from England around the tip of Africa to India called for a beer that would not skunk to death. Lagers at the time were "under-cooked" in the sense that wort was not fully fermented, leaving some of the sugars from brewing to later "cook" along the trip around the Cape of Good Hope. While other well-fermented brews like stouts and porters could survive the trek, the addition of hops brought lighter-bodied beer to the masses half way around the world. Thus the "hoppy" English pale ale or original IPA was born.

Samuel Smith is a notorious British brewery from Tadcaster, North Yorkshire, with a vetted history of brewing a range from

typical ales to oddballs like Organic Raspberry Fruit beers. From a bomber (550 mL), Samuel Smith's IPA provided a light copper, amber to reddish effervescent color. Almost pungent yet mild sour notes bit the nose on first whiff. Not the IPA I expected.

The taste is subdued and lacks a strong alcohol flavor. A thin amount of lacing caresses the glass and a slightly greasy, oily mouth feel finishes a sip. Diacetyl, (C₄H₆O₂) is a fermentation byproduct which gives the beer its slippery smoothness. As I sip, an immediate bang of fermented grapes or fruity perfume hits my tongue and lingers slightly as the hops finish on my taste-buds. Mouth feel is not robust and makes this a very drinkable beverage as a whole.

Fellow samplers noted the beer "smells like cheesy alcohol" and "kind of like cleaning supplies." The latter sampler revised his assessment by comparing the beer to a Shiner Bock. Drinking while eating, I noted the beer might surprisingly pair well with carrots. Others suggest this seemingly hop-inhibited hopped beer would work well with spicy, aromatic foods rich with tomatoes, curry, and vegetables, as are typically suitable to combine with IPAs.

As a bomber, you would hope this beer had a bit more punch (only 5% ABV) and a more spicy or complex flavor. The fruity high notes, mild hops, and slightly breadly taste match the traditional English pale ale style well and would be a good upgrade to compare to a Newcastle.

Cooking Corner

Egg in a basket

Butter

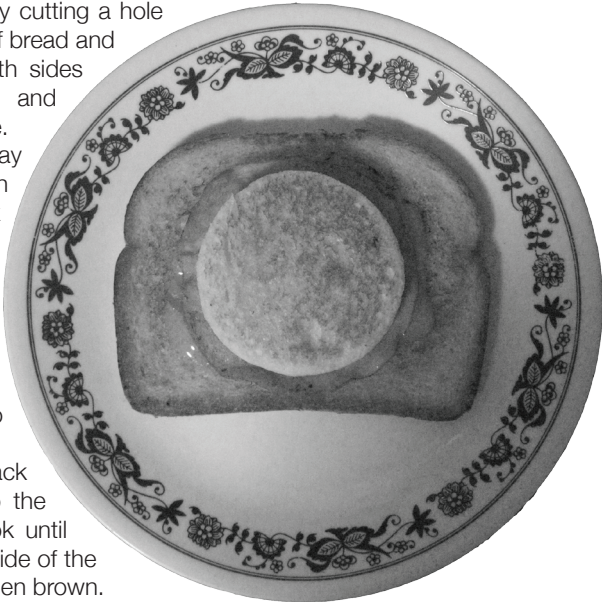
[Optional]
Cheese
Ham

Instructions:

1. Prep by cutting a hole in the slice of bread and buttering both sides of the slice and cut-out circle.
2. Spray a skillet with non-stick cooking spray, fire up the stove and throw the bread and cut-out into the pan.
3. Crack the egg into the hole, let cook until the bottom side of the bread is golden brown.
4. Flip the bread / egg and

cook until the other side is golden brown.

- [Optional]
5. Place a slice of cheese on top of the egg in a basket right after flipping, and add a piece of ham.
6. Enjoy!



TIM WEILERT / OREDIGGER

Tim Weilert
Content Manager

V for Vendetta is an excellent film. Not only does it offer a pointed commentary on modern government, but it also inspired this writer... to make breakfast. Last year, right before the drudgery of finals week I watched *V for Vendetta* and was inspired by the scene where V cooks eggs in a basket while listening to the Stan Getz version of "Girl From Ipanema." As my roommates will attest to, I have often been found since then cooking eggs in a basket, listening to the same record. However, this is a hearty meal that can be eaten any time of the day. Also, health conscious cooks can use alternative ingredients such as wheat bread and butter substitutes. So without further ado, a delicious and simple comfort food:

Ingredients:
1 Egg
1 Slice of bread

Book Review: *Hawkspaar* by Holly Lisle

Zachary Boerner
Copy Editor

Holly Lisle's second novel of Korre, *Hawkspaar* continues about 20 years after where her first book of the series, *Talyn*, left off. It follows two separate characters, Aaran and Hawkspaar, and their quest to save the Tonk from almost absolute destruction.

The book starts off well enough and begins by introducing the world in which a nameless slave has grown up and lived. Living on an island in the middle of the Dragon sea, a horrendous area, great leaders seek the oracles of the island to have their fortune told. These oracles can see various things about a person, depending on what eyes they wear, the method of their magic. The oracle Hawkspaar, wearing the hawkspaar eyes, is the oracle of war, and bids the slave girl, who becomes the new Hawkspaar, to take the eyes so she can save the Tonk, a race of nomadic people.

Aaran, on the other hand, is a tracker on a Tonk vessel. He helps the vessel track down slave ships that have captured Tonk children

and rescue them. He gets a hunch from a powerful magic current that some people need his help, but his captain refuses to sail into the Dragon Isles, knowing that it would be almost suicide. Aaran then decides to take the money he has saved from his voyages and buy his own ship and crew to sail after the people who need his help.

While the book starts off well enough, there are a few problems. First, during the time on the isle, Hawkspaar fears that she is in danger from one of the other oracles up until the point she leaves. Lisle builds up a current of hatred from the other oracle, but leaves the entire plot hanging after that point. It is never referenced again, and, indeed, the island itself is never really referenced again.

Secondly, as the book comes closer and closer to the finish, it feels more and more like Lisle was trying to meet a deadline and had very little time in which to write. The ending feels rushed, and shorter events which took pages now take mere sentences while events that should be pages long are reduced to paragraphs. While it is well-written, it just didn't have the feel that it was well thought through.

Also, there are constantly references to three magicians: a magician who is in his own personal Hell, a magician that Hawkspaar defeated, and one in the future that she will have to face, and that all three have some bearing on whether she will live or die later. However, when it comes down to it, the culmination of all these worries takes up the better part of a single page, completely neglecting all the previous dire warnings that have been fed to the reader like a broken record.

Finally, the characters are not well-developed. Hawkspaar's best friend from the island practically falls off the page once they escape, and Hawkspaar herself is the stereotypical character with power who doesn't want it but has to use it to save the world. Aaran, alternates between fretting about Hawkspaar, his sister who has been missing for 15 years and whether or not they'll survive. The characters are there, but they have very little substance.

The book is enjoyable, and fans of fantasy should check it out. However, it is certainly not the best fantasy book out there, and you don't have much time, it is better to skip this book in favor of another.

E-Days concert preview: CSM's own Filthy T

Tim Weilert
E-Days Committee

Filthy T is the combined work of rapper/producer Ben Hedman and songwriter/guitarist Joe Barnholt. The sound of the band is often compared to Gym Class Heroes, Atmosphere, and Denver's own Flobots. As a rap-rock duo, the two have been creating music together for four years.

In December 2008, 93.3 KTCL declared Filthy T one of the top ten bands in Colorado, and picked up the band's first single "Soular System" for regular rotation. The song received a positive response from both listeners and critics, and earned the #11 spot on KTCL's "Most Wanted."

Originally united by their passion for slacking off in math class, this dynamic duo met at Denver East High School in 2002. Ben spent the next

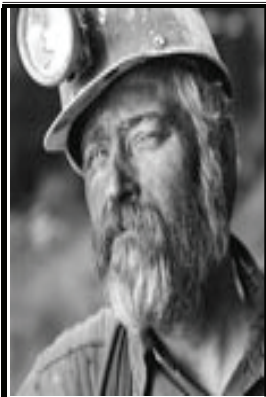
few years rocking stages as a hip-hop emcee, and honing his skills as a producer. While playing over 20 shows throughout his college tenure at the University of Colorado, he managed to stay focused on academics and graduated with honors. In the fall of 2008, he began classes at Harvard Law School.

"Sloppy" Joe Barnholt graduated from the Colorado School of Mines in May 2008 with a degree in Mechanical Engineering, where he spent long hours playing guitar instead of doing homework. If you recognize him, it may be because he was a Resident Assistant and heavily involved in numerous student activities, including intramural sports, MAC events, and Coors Lab. After completing a course on music technology, he began songwriting and recording. Joe remains an avid guitar player, sports

enthusiast, and the only punk rocker to complete a cover of "It's Raining Men."



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Benjamin Johnson
Staff Writer

Background

In a time when memorable rock albums are hard to come by and bands that break the mold of mainstream appeal are ever scarcer, an album has appeared that redefines the traditional bounds of modern rock. *Innocence and Instinct*, released February 10, emphatically brought forth a style of passionate, instrumental rock that combined forceful screaming, memorable anthems, and driving guitar riffs accentuated by the epic feel obtained by the strings in the background. Red released their first album, *End of Silence*, in 2006; it was criticized as being too similar to Linkin Park. After extensive touring with bands Three Days Grace, Breaking Benjamin, Chevelle, Seether, Shinedown, Sevendust, Kutless, and Flyleaf, the band formulated its own unique sound while not straying too far from the style found on its debut album.

Memorable Song

"Shadows" is a song that captures the entire essence of the band. The track starts with a head thumping guitar riff that blends effortlessly into a mellow opening verse. The lyrics

portray the struggles of a man faced with trials and calamity. His need for his lover is the answer that pulls the protagonist through the "shadows." The chorus is perhaps the catchiest on the album and is followed by more of the heavy guitar and occasional passionate screaming. The song ends as abruptly as it began, paralleling the theme of the album: life is burdensome yet brief. A solid chorus, a perfect mix of hard and soft elements, and the occasional release found in the screams of lead singer Michael Barnes make this track one that embodies Red as a band.

Least Favorite Song

The album has only one true ballad, "Take it all Away," which offers an odd ending to an album that embraces a much harder rock style. As is true for many great albums, the worst song is not particularly bad, simply one that gets set aside among more memorable ones. Even though the track seems somewhat out of place, it does offer a fitting finale to the album upon further investigation. The mellow instrumentation embraces the lyrics, pleading for the chaos of the world to be taken away. Much of the album centers on facing problems with force, symbolized by the driving guitar riffs. This track offers a glimpse behind the

surface-level persona, which is portrayed by the softer sound and the vulnerable feel that the strings and piano provide. However, the intensity that is found on the rest of the album is not sacrificed with the mood change.

In Closing

Red's sophomore album brings to the table so many elements that are lacking in most of the other rock albums. Passion is evident in Barnes's vocals and the lyrics tackle difficult issues surrounding modern culture; this automatically raises the album above normalcy. The ingenious blend of rock and strings is nearly perfected on *Innocence and Instinct*, incorporating the strings into the middle of more songs would be the only area of improvement. Another slight problem with the album is that it is somewhat repetitive, there is not much variety of sound or style with the strings; however, the rock portions of the album are more diversified. Overall, this album is a pleasing anomaly in the world of modern rock.

Reviews

Appeal to Reason. Rise Against



Spencer Nelson
Content Manager

Note: This album should appeal to fans of Black Flag, Billy Talent, Gaslight Anthem, Red Jumpsuit Apparatus.

Since their formation in 1999, Rise Against has produced unstoppable anthems full of musical and lyrical brilliance. *Appeal to Reason* is no exception. Over their first four albums, the sound of Rise Against has shifted from hardcore punk to, most recently, mainstream rock. No matter what genre Rise Against has fallen in, they remain unique in sound and style, despite excessive numbers of bands copying them. When they released their fifth studio album in October of last year, Rise Against proved that despite their sound moving into a region of radio-friendliness, they can still retain those who simply want to rock out to solid guitar riffs and no-nonsense lyrics.

Musically, Rise Against can nearly be defined as post-hardcore punk. Every song is driven along by fast drums, fast guitars, and fast, powerful vocals. The chord progression in songs is predictable to say the least. Few songs pass without a pick slide. Despite repetition, no song becomes dull. The formula for every song on *Appeal to Reason* rarely changes. Nevertheless, things still are shaken up occasionally, such as a random breakout into a waltz time in the middle of the song "Entertainment" or the nearly all acoustic song "Hero of War." However, consistency is not bad here.

Lyricaly, Rise Against is in the same league as Flobots and Rage Against the Machine: every song has a political message somewhere. The album starts with the song "Collapse (Post-Amerika)," containing the chorus "This is cardiac arrest/Of a world too proud to admit our mistakes/We're crashing into the ground as we all fall from grace." Hopelessness permeates most of the album. The first single released from *Appeal to Reason*, "Re-Education (Through Labor)," references unskilled laborers who cannot put up with being taken

advantage of any longer. "Hero of War" paints a powerful image of a soldier and the atrocities of war. Some songs like "Strength to Go On" and "Dirt Whispered" focus on how much information is unknown. Often, the lyrics are intended to incite the listener to action. The song "Kotov Syndrome" contains an excellent example: "Ten foot walls built around us/White picket death, so quiet, so safe/But if we fall, there will be nothing and no one to catch/So sit back and watch as we/Spin out of control." The message Rise Against wants to portray is neatly summed up in the song "Entertainment": "But can't you see the end is coming soon?"

The major mark against *Appeal to Reason* is that there is not as much originality as in previous albums. There is very little that can be heard on *Appeal to Reason* that could not be heard on *The Sufferer & the Witness*. In fact, it is quite easy to mistake the opening riff of "Kotov Syndrome" of off *Appeal to Reason* to "The First Drop" from *Siren Song of the Counter Culture*, Rise Against's third album. Despite having nearly the same sound as previous albums, *The Sufferer & the Witness* had dramatic tempo changes and breaks in the middle of songs that kept things unpredictable. *Appeal to Reason* cannot claim anything as ground-breaking as any previous album. Perhaps it is because this is the first album with new guitarist Zach Blair that makes this album seems to have traveled nowhere from *The Sufferer & the Witness*. Regardless, fans of Rise Against should remain fans after *Appeal to Reason* since it is exactly the same as what they have known.

Rise Against has broken away from their origin and joined the much more generic sound of post-grunge, mainstream rock. Driven entirely by speedy guitars and heart-felt lyrics, Rise Against's formula has produced a successful album that deserves a listen from fans of the many forms of rock: punk, mainstream, hardcore, and grunge. Although *Appeal to Reason* is the least innovative release from the Chicago-based group, at least they pulled their sources from good places.

Must See Movies

Better remakes

Benjamin M. Weilert, Staff Writer

In the current state of Hollywood, there are three types of movies: originals, sequels, and remakes. Unfortunately, that means that only a third of the films that come out are not derived from something that came before it. However, in the realm of remakes, there are very few bright lights. Most remakes never quite live up to the originals they came from, usually because any twists have been revealed already, so plotlines sometimes deviate in order to draw the crowd. Still, there are some movies that end up being better than their originals. Either due to the technology at the time of the original, a better ending or being an overall more cognizant film, this week's Must See Movies looks into the realm of better remakes. Coincidentally, all of them have to do with casinos or heists.

1. Casino Royale (1967 / 2006)

The original *Casino Royale* did not really have much to do with the Ian Fleming novel of the same name. In fact, the original was more of a spoof on the whole spy genre as a whole, which would explain why the likes of Peter Sellers and Woody Allen were cast in this film. However, when it came time to introduce a new actor for the role of James Bond in 2006, it was a pleasant surprise that *Casino Royale* would be remade. For decades, this campy film had drawn criticism for even being somewhat related to the Bond franchise. The remake ended up being far better than the original, because it actually stuck closer to the ideas presented in Fleming's book. Plus, the 2006 version of *Casino Royale* actually had an ending, as compared to the end of the 1967 version, which included everything from monkeys, bubbles, the cavalry, and parachuting Indians to get the writers out of the corner they had written themselves into.

2. Ocean's Eleven (1960 / 2001)

Considering that the original *Ocean's Eleven* was one of the classic "rat pack" movies with the likes of Frank Sinatra, Dean Martin, and Sammy Davis Jr. peppering the cast list, the remake of this film ended up being a little better due to some technological developments that had arisen in the 40 years since the original came out. Even though the new cast, which included George Clooney, Brad Pitt, and Matt Damon, did not do any singing as in the original, their heist was much more impressive. In the 1960 version, the heist was pulled on New Year's Eve with the aid of glow-in-the-dark paint, since security was pretty light back then. However, in 2001, the addition of lasers, retinal and thumb-print scanners, and multi-layered vaults to the realm of security systems made the feat of robbing a casino in Las Vegas much more difficult than 40 years earlier. Therefore, being able to pull off a heist with this much security makes this remake better than the original.

3. The Thomas Crown Affair (1968 / 1999)

The Thomas Crown Affair shares many similarities to the *Ocean's Eleven* remake. The originals had some big names, in this case Steve McQueen and Fay Dunaway, and some technological advances in the years made the remakes better. Both films share similarities, including plot and title song ("Windmills of Your Mind," which won an Oscar for the original and was performed by Sting in the remake) However, even though the original had the famous "chess scene," the ending of the original left the viewer disappointed and wanting more closure. This is where the remake excelled. Both films are probably on the same level, but the closure attained at the end of the remake puts it a level above its original.

For Homework – See King Kong (1933 / 2005)

CSM-NSBE Presents



BLACK HISTORY MONTH CULTURAL CELEBRATION

February 20th (This Friday!)

Student Center Ballrooms - A, B and C

Doors open @ 5:30 pm

...A walk through black history - in rhythm and prose...

FREE Admission @ 5:30 || \$3 for food

BE THERE!!!

Geek of the Week

...Camo Cotten, Senior: Chemical Engineering

Nathan Thomsen
Staff Writer

Why are you a geek?
Oh, let me count the ways... I love math and science. I don't know how to describe it except as passion. Some of the stuff I study, no one understands, but it moves me. It's beautiful.

Why do you like math and science so much?
How do you explain why music is beautiful or why a painting is beautiful? I think in the same way a musician or a painter captures an emotion, our math and our science capture reality in the same way—it's never perfect, but it's a creative effort.

Wow, that's deep. What do you want to do in life?
My plan right now is to be a professor. I want to go to grad school (but not at Mines), get a PhD in Chemical Engineering, do post doctorate work, and start teaching. I think everyone wants to share what they're passionate about.

Do you have any random goals you want to achieve?
I want to write a book, like maybe a self-help book or fiction—I just like to write. One day, I want to be able to say I've written a book. And

run a marathon.
What have you seen that's reminded you you're at an engineering school?

I think seeing the Society for Creative Anachronism and people running around in tunics with fencing swords.

What is anachronism?
Something out of its time, like Renaissance festivals.

What do you love about Mines and being a geek?
The small size. I couldn't go to Boulder because it's too big. Also, I really like Anime. I haven't watched too much, but I do enjoy it. And Facebook: without it I wouldn't remember your name.

What do you hate?
Programming. Part of why I like the Chem-E department is I didn't have to take programming. I hate how everything with electricity I touch breaks. (I could never be a EE.) I also can't stand that some people won't admit that they're at an engineering school—they just can't come to grips with who they are.

Are all engineers nerds?
Yes. A nerd or a nerd in denial.
How do you feel about graduating in May?
It will be good to have a sense

of completion and accomplishment; finally having something to show for it.
Any plans for spring break?
I might go on a long bike ride with my roommate Kurtis. Like a cross-country trip that would take a few days. Otherwise I'll just stay home the whole time—I'm really introverted.

How was growing up in a small town (Hotchkiss, CO)?
My dad was the town vet so people would say, "You're Doc Cotten's kid, right?" This happened to me weekly.

Favorite hobbies?
Road biking, writing, Facebook, web comics, drinking good beer (not Coors), cooking, and indie music.

Why is chemistry not a terrible thing?
If all the chemistry stopped in your body, you would die in an instant. That's why cyanide kills you: it stops reactions.

What is the geekiest thing you own?
Probably an ant farm. The "dirt" is a translucent gel so you can see the tunnels the ants dig.
Do you like ants?
I like life and biology in general. I also have plants and an egg-

shaped aquarium.
Favorite Teacher?

Professor Gardner (Chem-E). She really cares about all her students and she's a huge nerd. That's awesome. Once, during a fluids test she was giving, she derived an equation from the next chapter with no notes. She was giggling in front of the class and I was really confused.

What funny things have your professors said?
"I thought my husband

was having an affair, then I found out it was Harry Potter." (Prof. Gardner). "This test will cover the accumulated knowledge of mankind." (Prof. Persichetti, Bio-process Eng). "Don't pour the gasoline on the fire, because then you'll have a conflagration of ignorance." (Prof. Job, Calc 2)



NATHAN THOMSEN / OREDIGGER

Faculty spotlight: Wendy Harrison

Benjamin Johnson
Staff Writer

Dr. Wendy Harrison came to America because the University of Manchester sent her to Washington DC for her PhD studies. After attaining her degree, Harrison and her husband, Dr. Ric Wendlandt, looked for a company or university that offered two jobs in the field of geochemistry. The Colorado School of Mines was advertising for two, qualified geochemists so Harrison and her husband gratefully accepted the rare positions and now Harrison is the Associate Provost at Mines. After twenty years Harrison says that Mines is "an exciting place to be, very exciting."

Before coming to Mines, Harrison was employed by NASA, where she experimented with shock metamorphism. She described it as "using a big gun designed to shoot a projectile into a rock which models how a meteorite would hit the moon or the earth." Her main research interests at Mines have been in aqueous geochemistry, which focuses mainly on drinking water quality and ground water contamination. Harrison mentioned that she "also worked on carbon dioxide gas hydrates that are disposed of into the ocean and any of the ways water and rocks interact."

As a former professor at Mines, Harrison reflected on the quality of Mines students. "I think they are great, I love the students," said Harrison, "They are hard working, very focused on their career objectives and not just engineering; they come from diverse backgrounds and it has been a pleasure to get to know the students." Harrison also said that she has enjoyed "taking students overseas with

the McBride Honors Program. It helps young people to have a better international perspective which is very rewarding."

"One of the big opportunities for Mines in education and research is to become recognized as a leader in relating academics and policy making, taking things we do really well here and combining it with how society is going to use that information; we can't be disconnected. For example, we can do the best research in the world on biofuels or wind energies, but if we don't interface with those who make policy then how would that research be used?" Harrison said when questioned about the future of Mines. She also added that "this interface will

become more prominent, especially because the government is interested. I think that is where Mines can make a difference."

Outside of her busy schedule, Harrison likes to hike, fish, back-country ski, and be a beekeeper. "I always wanted to keep bees but unless you know a beekeeper it is very hard to get started. The internet was very helpful, though, because there are online beekeeping sites where experts can give advice on equipment and maintenance," explained Harrison. Although students think that all professors do is research and teach, she said that she often hikes in White Ranch Park near Golden, which is her favorite place to explore.



BENJAMIN JOHNSON / OREDIGGER

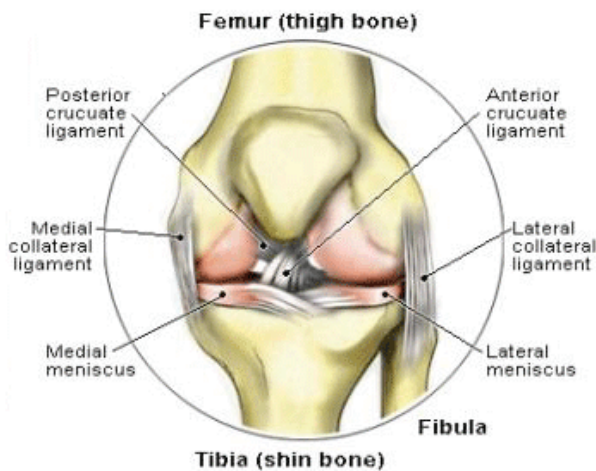
Avoiding knee injuries

Heidi Babkiewich, RN
Guest Columnist

While the knee is the largest joint in the body it is also the most commonly injured! By taking a few precautions, listed below, one can substantially reduce risk for knee injury now and in the future.

1. Before exercising, warm up! Walk, ride a stationary bike or do some other low-impact activity for 5-10 minutes. Followed by stretching the muscles in front of the thigh (quadriceps) and in back of the thigh (hamstrings) to lessen the tension on the tendons and relieve pressure on the knee joint.
2. To preserve stability of your knee joint, it is wise to strengthen your leg muscles. A few exercises to accomplish this are walking upstairs, cycling, wall sits, lunges or supervised work outs, with weights.
3. If you ride a bike, make sure your seat is high enough so that pedaling does not put too much pressure on your knees. Consult your local bike shop for assistance.
4. When working out, wear shoes that are in good condition and fit properly. Knee problems are common in people who have "flat" feet or feet that roll inward. Wearing custom inserts (orthotics) in one's shoes is also helpful.
5. Maintain a healthy weight. If you are overweight, lose those pounds! Being overweight stresses joints and leads to degenerative arthritis.
6. Take extra caution to crouch and bend at the knees and hips when turning, pivoting and jumping to reduce the chances of ACL injury.

Knee Joint



COURTESY OF CSM HEALTH CENTER

Art of Science

ERIK LORD / OREDIGGER



"There is a single light of science, and to brighten it anywhere is to brighten it everywhere."
~Isaac Asimov

Club Spotlight: Sigma Lambda

LB Williams
Staff Writer

Sigma Lambda sounds like another Greek honors society or sorority. In actuality, they are our campus GLBTAQQTI (Gay, Lesbian, Bisexual, Transgender, Allies, Queer, Questioning, Two-Spirits, Intersex etc.) organization. GLBT for short, this organization seeks to inform the CSM campus that sexual identity goes beyond sexual orientation.

'Sigma Lambda' as a GLBT organization name is unique to the Mines campus. It distinctly exhibits a respect for technical/engineering nomenclature. "Lambda" represents the multiple frequencies of gender identity and sexual orientation and "sigma" being the sum of those identities.

Many Americans are not familiar with anything beyond the stereotypical gay character they see on TV. GLBT organizations make it their responsibility to smash those stereotypes by encouraging constructive communication and diversity through educational programs and positive visibility.

Like most social college organizations Sigma Lambda is about fun events and specifically GLBT camaraderie. Promoting a consciousness of understanding and respect for sexual minorities is definitely their greater purpose. They host multiple annual events that encourage positive GLBT reception across campus.

Sigma Lambda recently held their fourth annual Safe Zone training. The

Safe Zone Project is designed to educate everyone about the experiences, concerns and issues of lesbian, gay, transgender, bisexual, and questioning members of our community. The program is highly respected and taught world-wide.

Other annual unity events include a fall semester Kafadar BBQ for 'Coming Out Day' and a spring weekend ski trip. A distinctive educational event is 'Living Library.' Any campus member with an interesting or personal story to share can become a 'book' and any interested campus member may sign out a 'book.' It is a unique opportunity to interact and learn first hand about another culture or lifestyle.

In conjunction with the Mines Libertarians and CSM Democrats, Sigma Lambda presents 'Movies for Thought,' a weekly Friday night movie club of deep or controversial movies for free (in exchange for viewers thoughts after the movie). All are welcome to the free pizza, interesting film, and thought provoking conversation. Look for the movie listings in the Student Activities 'What's Happening' announcements.

Sigma Lambda did boast high attendance record for their 'Movies for Thought' showing of 'Rocky Horror Picture Show' last semester. This spring they plan to show the Academy Award winning "Boys Don't Cry" and "For the Bible Tells Me So," a documentary chronicling five American families' attempts to reconcile their internal conflict between homosexuality and their [Christian] faith.

Civil Engineering Major, Andrew Aschenbrenner, has been president of Sigma Lambda for two years. He believes in the benefits of the organization, to its members and to the CSM campus. "Understanding, acceptance and community are vital for the both personal and academic success of anyone." Sigma Lambda provides GLBT students with a safe place to be themselves, to ask questions and learn, and to have fun.

Sigma Lambda meets the first and third Tuesdays of every month at 6 PM in the Ben Parker Student Center President's Office. Any respectful person is welcome to attend.



Σ (Colorado School of Mines) λ
COURTESY OF CSM SIGMA LAMBDA

CSM Dead Poet's Society speaks again

LB Williams
Staff Writer

This past Friday's Concert in the Library differed from the normal musical presentations with its lack of musical instruments. Each student performer wove melodies with theme and drove beats in meter with only their strong voices. The afternoon event was the annual spring presentation of the Colorado School of Mines Dead Poet's Society and all attendees were highly entertained with original student poetry.

CSM Senior Lecturer Toni Lefton, of the Liberal Arts and International Studies (LAIS) Department, introduced the event and the students quite fondly as "my poets," clarifying it not as ownership, but pride. These students are "intelligent left-brained engineer-

scientists and [every year] they are as talented as any poets I've ever known at any institution. I am proud to be a part of that process."

All the performers are current or past students of Professor Lefton. Derk Slottow, a senior, is in his fourth class taught by Lefton. "At home in nature," Lefton said as she introduced Derk, "[he is] never short on refreshing new views of the world around him." He then commenced "Amazon:"

"Fingers of asphalt...Streets of drive-bys / alley way abductions / and metropolitan molestations / driveways of death / the avenues of war...pounding its charcoal chest in victory / beneath its enormous weight / the olive tree of civilization will shatter / because the cascades of oil have clogged the gutters...dependence on excess will claw us to the pav'ed ground."

"Dead Poet's Society is an important event for student poets," Professor Lefton explained, "It is important they know their poetry matters beyond the classroom. That what has meaning for them also has meaning for others."

The "quirky" name Dead Poet's Society is "fondly" fashioned after the Robin Williams film of the same name. Lefton said, "I don't have my students rip pages out of their books... I feel that poetry is within all of us. We have to come to it on our own terms. Write about what makes us who we are...What it means to be young and alive in 2009."

Each presenter successfully conveyed their unique past and current self through entertaining verse. Eileen Sullivan, majoring in mining engineering, brought machines and mechanical themes to each of her poems. Kristin Smith recited a poem about her "Daddy." Another, "Non-refundable," spoke of life experiences wearing upon the human heart.

Hilary Brown, a graduate student in electrical engineering, read of coffee and relationships with boys "who prefer blondes / who don't know differential equations." In "Tantalus Knows" Hilary wove intelligent words into her prose, "congealed...synapses...potential... capillaries magnetized by ice...force the senseless into sensible."

The student poets had written each other's biographies and many were quite entertaining for the audience. Adam Duran had two bios, one by a classmate was

a limerick praising his "damn sexy tan" and the other autobiographically boasted, "I am to poetry what mayonnaise is to a club sandwich...It's not easy being as deep as I am when the whole world is shallow, except of course for my audience...My poetry is the reason the sun rises in the morning." Duran's poems spanned multiple topics including the fun of ADD and strong sadness of "Iron Man."

Abdullah Ahmed, "from the heart and arteries of Iraq," poetically expressed issues of personal identity in a judging world and of war and a healing God. Having personally experienced war he composed "Final Warning" pleading, "oh friends, my heart is breaking / if this is the end why are we still friends in the making?" Published in a book called Social Awakening, Abdullah's "Singular Thoughts" then rhythmically unfolded:

"It is but you who split the worlds into the stars / and it is but you who creates peace from scars / from you we start and to you we end / and to you our praise we send."

Daniel Kuntz also presented religiously themed poetry close to his heart. "He is studying at Mines so he can save the world some day,"



LB WILLIAMS / OREDIGGER



LB WILLIAMS / OREDIGGER

began Lefton, "but right now, let him save your soul, with his poetry." Lefton introduced Kuntz as, "one of CSM's finest unknown poets."

Kuntz honored Professor Lefton after the event saying, "Without the joys of poetry now in my life, I would have just become another lifeless engineer churned out by the Mines' machine. I am appreciative of the opportunity to have my eyes opened in one of the more artistic courses taught by our LAIS department."



Mines Network: The good, the bad, and the about-to-be-awesome

Ian Littman, Tech Break Columnist

Wondering how the Mines network works or what specs it runs at? More importantly, have you noticed that the network has slowed significantly over the last semester or two and wondered whether a fix was coming down the pipeline? I was able to

interview Dr Phillip Romig, Associate Director at the organization formerly known as Academic Computing and Networking ("... AC&N and the department that was Information Services merged on February 1... and they haven't decided on a name for us yet," he

states) to get the scoop on what does, and will, set Mines' network apart from the rest.

First off, the campus has a strong wired network, with hundred megabit connections to campus computers and gigabit or dual-gigabit links between campus buildings. Wireless is handled via special Cisco hardware that is quite different from a router you'd get at Wal-Mart. "We use lightweight access points, which are little more than smart antennas," Dr. Romig explains. "They pick up the traffic off the air, and they leave it in the 802.11 packet, [then] ship it to the wireless controller back [in CTLM]..." The big advantage is the ability to quickly see the global and local status of the wireless network across access points, and to move wireless clients from one access point to another to keep congestion at a minimum and performance at a maximum. In high-traffic areas like lecture halls, several access points work together to handle the load.

In some cases, however, there just aren't enough access points to cope with the load placed on them. This creates congestion and wireless slowness, and stems from two main reasons as outlined by Romig, "Something that a lot of people don't realize about wireless is that cell size, as you go down in speed... has to get bigger, and it has to get bigger for the entire group. So even if you're associated at [maximum] speed [and] if there's another client associated at the 2 meg speed... it pulls you down below [maximum speed]. Also, in terms of time slots on the network... after you get more than ten or fifteen clients associated with an access point you start getting congestion ..." The computing department watches the wireless network closely, deploying access points in areas of congestion, but lack of funds, coupled with the expense of the access points (\$700 or \$800 for installation and software costs are taken into account) mean that only the most dire cases are currently treated. Romig did mention, however, that tech fee proposals are a great way for departments and clubs to get funding for a wireless access point in a poor-coverage or congested area.

Mines' link to the internet is a bit less custom at the moment. A 155-megabit-per-second OC3 fiber line, rented from Qwest for just under \$5000 per month, runs between Mines and Denver. "It's not all that different from a local phone line, it's just a little faster" Romig states. A few key differences lie at the Denver end of the OC though. First, the line is synchronous, meaning that uploads can run just as quickly as downloads, something largely unseen on cable and DSL connections, for both technical and policy reasons (ISPs don't want you running high-bandwidth servers on their connections). Secondly, Mines is part of the Front Range Gig-

aPOP (or FRGP), a consortium of research, government, and education organizations spanning Colorado, Wyoming, and even Utah that have banded together to lower internet costs through economies of scale. Mines is middling in size out of the institutions, with smaller schools using the network through the University Corporation for Atmospheric Research Point of Presence (UPOP) "secondary" network. Larger universities (DU, CU, and CSU are the big players) tend to run gigabit or dual gigabit Ethernet links over fiber, then buy a set amount of bandwidth per month that is lower than their link capacity. FRGP members, depending on stature, get access to "commodity" traffic only (through Level3 and Qwest), ultra-high-speed research network access through internet2 and National LambdaRail (or NLR), commercial-network ultra-low-cost access through NLR's TransitRail service, or some combination of the three, at different capacities. Mines subscribes to all three service types in addition to other FRGP amenities such as Comcast peering (direct network-to-network exchange of data so cable customers have fast access to, say, the Mines VPN), Akamai caching (for fast Hulu, iTunes, and other such media downloads), and interconnection with other FRGP members. Due to TransitRail, which connects directly to several national backbone networks in places like Chicago and Seattle, Mines has only needed to pay for 60 Mbps of "commodity" internet at the FRGP... the remaining traffic "clogging the tubes" runs over Internet2, National LambdaRail, TransitRail, Comcast, or FRGP itself.

Herein lies the rub. Due to the explosion in rich online media, Mines' OC3 to Denver just isn't cutting it anymore. "We're way past saturation," states Romig. "We're actually getting [at peak times] 140 megabits per second... which isn't bad [for an OC3 line] which is 155 megabits, minus cell penalties [and other overhead]." In short, during peak usage, Mines is maxing out its connection, and it's a wonder the network can even carry as much bandwidth as it does in the current circumstances. Romig and his colleagues are curious what the "real" usage ceiling of Mines' network is. "We know we're maxing out, but we don't know where we are in terms of, unconstrained, how high the peaks would go," he says. "I'm fairly confident that those peaks would go to 200 megabits easily, and in the near future would be even higher than that. So we actually are very badly constrained." At these levels of bandwidth, routers have to randomly drop packets to keep up, creating even more problems. "...As you get closer to getting congested you actually generate more traffic; you have to recreate the traffic you threw away and... other horrible things. On the inbound link we're pretty badly

constrained and overcongested at this point," Romig laments.

Fortunately, hope is in sight. The Colorado Department of Transportation (CDOT), which uses fiber for signage, traffic management, and other duties in metropolitan areas, is limited to cellular or hand-worked sign changes along the 6th Avenue corridor. They wanted to run fiber to Golden, but costs were prohibitive at the time. Mines was in a similar situation. Over the past four years, the two organizations have partnered. The result of the partnership is redundant "dark fiber" (bring your own signal, internet or otherwise) between Denver and Golden, due to go live in mid-March. "It has also been scheduled to be finished in mid-December, in mid-January, February, and now scheduled to be done in mid-March, so I'm not holding my breath," Romig says, "but we're very, very close to being finished and as soon as that happens we will transition off of the OC3..."

The result of this transition will be, for starters, a gigabit link between Mines and the FRGP, thence to the internet. Due to pressures from researchers ready to run Mines' high performance computing cluster Ra with all manner of tasks, this link may well be upgraded in rather short order to a ten gigabit link, making Mines' the highest-capacity link to FRGP of any connected thereto. Needless to say, the people at what was AC&N are excited - they get to ditch the current OC3, are relieved of the need to buy another to cope with current traffic levels, and can find out just how high the "clipped" usage peaks go. "We're all very curious to see, and we're going to find out, how big those peaks are that are getting cut off now," says Romig. "We're all very excited to find out what those are... there's always a bottleneck."

That's the scoop on the Mines network, including some basic information on how things work inside the "tubes." If you've noticed congestion even on the wired network (recommended for use if you want more than ten or twenty megabits of throughput), be assured that rescue will come in the very near future; when Ra came online a few months ago Mines' network traffic became a much tighter fit, but the congestion will soon be relieved and Mines' internet will fly like any good R&E network should.

For more information on the FRGP, check out <http://frgp.net>, but be forewarned, most of the links are password protected. If you have a problem with the Mines network, send the computing center a help desk ticket, at <http://helpdesk.mines.edu>. They may not know about problems with the system until they're told about them, at which point they'll do what's in their power to fix the problems, so long as they aren't stemming from your own computer.

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Mines wrestling team is stronger after first victory

Nathan Thomsen
Staff Writer

With under one month of the season left, the CSM wrestling team is poised to prove their increasing talent. On Saturday, February 14, the Orediggers showed their strength with a huge victory in a dual meet against Grand Canyon University with an impressive score of 37-6. This is the team's first victory this season and improves their record to 1-6. There were several first place finishers including Cody Weitzel, Jesse Snider, Travis Wokasch, Jordan Larsen, Ryan Swanson, Bradley Price, Bryan Stansbury, and Pablo Mascareñas. This win puts the team on a clear path to success in the final weeks.

Talking to the wrestlers makes it clear they are excited about this season so far. Senior Sean Studer reflected on the general feelings of the group; "This is the strongest I've seen the program since I've been here." Junior Bobby Strain commented, "We've done really well. We've had a lot of freshmen step up and play a key role on the team." Jesse Snider, a red-shirt freshman, explained, "As a team I think we're doing better this semester. Individually, I feel the same way. It was hard getting used to college wrestling, but after a couple of matches I'm gaining more experience." While the team had not won a dual until Saturday, they have had a tough schedule and still performed well overall. "We had a really good dual against Nebraska Kearney with several surprising upsets," said Strain. In addition, at the Mountain Collegiate Open on February 7, Oredigger wrestled

tlers rose to the challenge and took three first-place victories.

The team now looks towards the last dual meet of the semester against CSU Pueblo. The home meet will be Wednesday, February 18 at 7PM in Volk Gymnasium. The meet is sure to be a good one, as Studer explains, "[CSU Pueblo] is a first-year team, but they've looked tough, so it should be competitive." The team is also preparing for the regional RMAC Championships (NCAA Division II-West) on February 28 at Nebraska Kearney. Mines will bring a full complement of wrestlers for the 10 weight classes at regionals and look to compete strongly against the other RMAC teams including Adam State, Western State, Nebraska Kearney, Mesa State and others.

Senior Cody Weitzel, in his last year of college wrestling, explained the importance of regionals, "For me, as an individual, this is really it. So it's do or die and I'm hoping to compete well at regionals and qualify for nationals, something I have been hoping for my entire college career." Weitzel also voiced his opinion that the team is in a good position to do well; "Coach Lewis has everyone healthy and ready to do great and really has the team headed in the right direction." The Orediggers are hoping to send at least a few wrestlers to Nationals (NCAA Division II Championships) at the University of Houston in mid-March. Overall, the team is confident and looks to continue to improve as the group grows and younger players begin to step up. According to one of the wrestlers, "Chicks love us, dudes fear us."

Mountain Spotlight: Arapahoe Basin

Eliot Matthews
Staff Writer

Arapahoe Basin, or A-Basin as it is most often called, is a majestic standard of true original Colorado skiing. A far cry from the bustling mainstream resorts and their base-side 5 star hotels and restaurants, A-basin is a reflection of a real "skiers" resort. It cuts the excess while piling on the powder, terrain, and local feel.

Stretching over the second half of the 20th century, the Arapahoe Basin Ski area has come a long way from its humble beginnings. Established in December of 1946 by a line-up of incredible post-war entrepreneurs, it has gone from single rope tows to 4-seat chairlifts, from a few acres to 900 acres, and from 1200 visitors in the first year to 425,000 visitors last year. Throughout the time it took to accomplish these transitions, major construction overhauls and new terrain have been introduced to the basin.

At 10,070 feet base elevation and 13,050 feet summit elevation, it is an extreme locale that marks the highest lift-access terrain in the country. With this elevation and its location within White River National Park, it is clear to see that none of the major renovations undertaken at A-Basin have been done easily. However, even with these challenging logistics, the management at A-basin has found a way to dramatically boost their facilities all while maintaining a low environmental impact. Examples of this attention to detail are best outlined in their stated environmental goals, which can be viewed on their website

(www.arapahoebasin.com), and throughout the resort itself.

By simply putting in one 4-seat chairlift, called the "Zuma Lift," on the formerly inaccessible back-side bowl, the resort's total skiable acreage increased 80 percent. However, this is not even the most amazing aspect of the construction. Since the bowl is located on national parkland, overcoming construction limitations had to be made. Since there were no previous access roads and no new access roads could be built, everything from equipment and construction materials had to be flown in by a Sikorsky S-64 Skycrane helicopter.

Leigh Heirholzer, Director of Marketing and Sales at Arapahoe Basin, elaborated on this subject, "I believe the helicopter had somewhere around 100 hours of flight time." She went on to say, "Since our environmental impact was so low, we have become a model to other resorts for future development and expansion." For taking such great precautions to limit their impact on the vulnerable high altitude landscape of the Montezuma Bowl, A-basin was awarded the 2008 NSAA Silver Eagle Award for Environmental Excellence in Visual Impact. This is an impressive feat that is friendly to nature, but even more so to skiers.

As stated above, this "simple" addition of a lift has brought a boost of 80 percent to the resort's total skiable terrain. This was a much needed on-slope addition because of the ever-increasing crowds. Also, due to the crowds, A-basin

recently was forced to put in 300 more parking spots. Last year, skiers that could not find a parking spot or hitch a ride were turned away. This year is much better, due to the increased capacity, but still faces some pretty stiff crowding issues particularly in the somewhat slow lift lines. On top of these new facilities, A-basin has several other very skier friendly facilities and attributes.

As a self-proclaimed all-mountain skier, I toured much of A-basin. Their terrain parks were quite adequate and comparable to any found at Copper Mountain or Winter Park, minus the large half-pipes and big-air jumps. Where Arapahoe stands out the most is with its free-style and go-big chutes, especially those on the Zuma Cornice and the East Wall. Unfortunately, snow has been lacking for much of this season for A-basin, making my experience a little rocky. However, given a more typical snowfall amount, pure powder dreams can come true on their slopes. Overall, A-basin provides infrastructure best suited for powder days.

Arapahoe Basin management, while following the advancements demanded by the populace, still does a fair job in keeping to their roots. Speaking with the many workers and “Beach” locals, they all seem to espouse the same sentiment: Preserve the mountain and what makes Arapahoe Basin what people have always known it to be. They take pride in being different from the many other nearby resorts and hold fast to their local-feeling, skier-friendly atmosphere.



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Science: art or religion?

Interpretive data versus dogmatic truth

JT Foss
Staff Writer

What if one day in the distant future, humans encountered an extreme set of circumstances that disproved Newton's second law?

Blasphemy?

Do you, with your mortal mind, yet "pure" understanding of science, have the ability to prove with absolute certainty that Newton's second law is 100% accurate?

The universe is, as far as we know, infinitely vast and incompletely understood.

As definitive as science seems, we can't know that we're right, we can only think so.

Our surroundings are a little less ordered than we give them credit for. Applying patterns is a cognitive crutch that helps humans make sense of such randomness.

I'll venture to guess that you haven't proven all of the equations and theorems you use on a regular basis; you've taken a leap of faith assuming that scientists before

our natural resources.

Once a paradigm is established, we just submit to that mindset rather than thinking outside of the box. This may astound, but it's not a sin to ignore the box entirely.

Why do things the ways they "should" be done, rather than submit to randomness and explore how they might be done?

So what do I suggest?

Think of engineering and science as an art, rather than a religion.

Math has no commandments, only properties of logic; similar, in a sense, to a painter's paint or canvas.

You don't have to believe in science. You can question it, push its limits, look for loopholes, and view it however you please, with no reprisal. You could change the world by finding a way to make an equation divide by zero.

arts and sciences keep science and art separate?

Because art is the free expression of, well, anything, it has an affinity for the abstract and random. And because a piece of art can be interpreted in infinite ways, it can provoke an infinite amount of ideas or perspectives.

Think
of engineering and
science as an art, rather
than a religion.

Stymied progress can be jumpstarted by inspiration. Art is the materialization of inspiration; engineering is its application.

The world is far too infinite for us to believe that our perspective is comprehensive.

Consider this: self-fulfilling prophecy (a psychology term) is the theory that states that expecting an outcome causes you to subconsciously nudge it towards happening. If we think something is supposed to be a certain way, we make it so.

Well, what if some psychological "truths" were actually wrong?

Psychology is very speculative (though rarely presented accordingly), and these speculations might not actually reflect truth. However, since we believe them to be, we've more or less made them real.

And if this is true, is it not possible that the mind is capable of much more than we've imagined?

Is it not possible that our established perspective is actually limiting us as a people?

What if the idea of self-fulfilling prophecy actually caused the propagation of self-fulfilling prophecy?

The beauty in our limitation of understanding is that there is much more we'll be blessed to understand. Were we to discard our proprietary view of ideas (and have confidence that we can keep coming up with stuff), we would become teachers, not hoarders of ideas.

They say the best way to learn is to teach. To keep a good idea inside is to concede that you can't come up with anything better.

If we were to be artists, and not just engineers, it would be easier to break the norm and use our (engineering) skills to create a more beautiful world.

Once
a paradigm is
established, we just submit to that mindset rather than thinking outside of the box.

I wonder what awe-inspiring things Mines

Alumni could do if they used their command of science in bold, creative, abstract, and maybe even ridiculous ways.

Every single person that reads this has the potential to do extraordinary things - leaving all the creation to the professionals will only confine us to the beaten path.

You need only luck to happen onto a new idea or innovation. Don't look for it, because then you're looking for something specific, which means you're limiting what you can find by ignoring the random nature of the world.



Minds at Mines

Recession reactions

LB Williams
Staff Writer

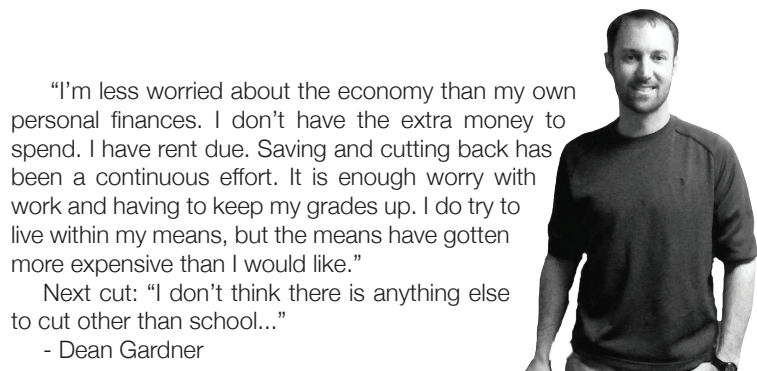
Since the economy is likely to get worse before it gets better, the question becomes: is the economic recession a physical reality for CSM students? And if so, where can meager college students look to trim the fat? CSM staff and students gave similar answers as to what they are already doing in the face of our economic recession and, if our economy worsens, what is the next cut they would be willing to make would be.



"Well, I don't eat out as much. I am cooking a lot more, eating more pasta. Aside from that, nothing."

Next Cut: "Probably, going out to bars. To be honest, right now, food consumption/eating is less important than hanging out with my friends and socializing."

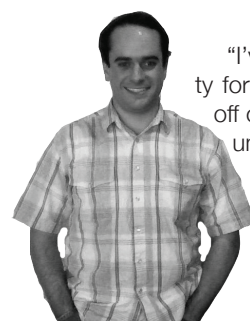
- Travis Yee



"I'm less worried about the economy than my own personal finances. I don't have the extra money to spend. I have rent due. Saving and cutting back has been a continuous effort. It is enough worry with work and having to keep my grades up. I do try to live within my means, but the means have gotten more expensive than I would like."

Next cut: "I don't think there is anything else to cut other than school..."

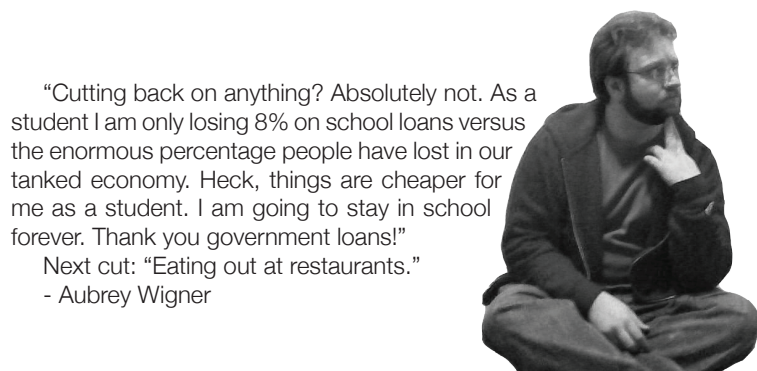
- Dean Gardner



"I've pretty much kept life as usual. Colorado is pretty fortunate. This is my home state! We are fairly well off compared to a lot of other states; we can still pay unemployment..."

Next Cut: "If I had to cut something, I wouldn't go out to eat as much. I'd also think to cut back on the gadget spending, the pleasure spending. I'd make sure I really have a use for it."

- James Morton



"Cutting back on anything? Absolutely not. As a student I am only losing 8% on school loans versus the enormous percentage people have lost in our tanked economy. Heck, things are cheaper for me as a student. I am going to stay in school forever. Thank you government loans!"

Next cut: "Eating out at restaurants."

- Aubrey Wigner

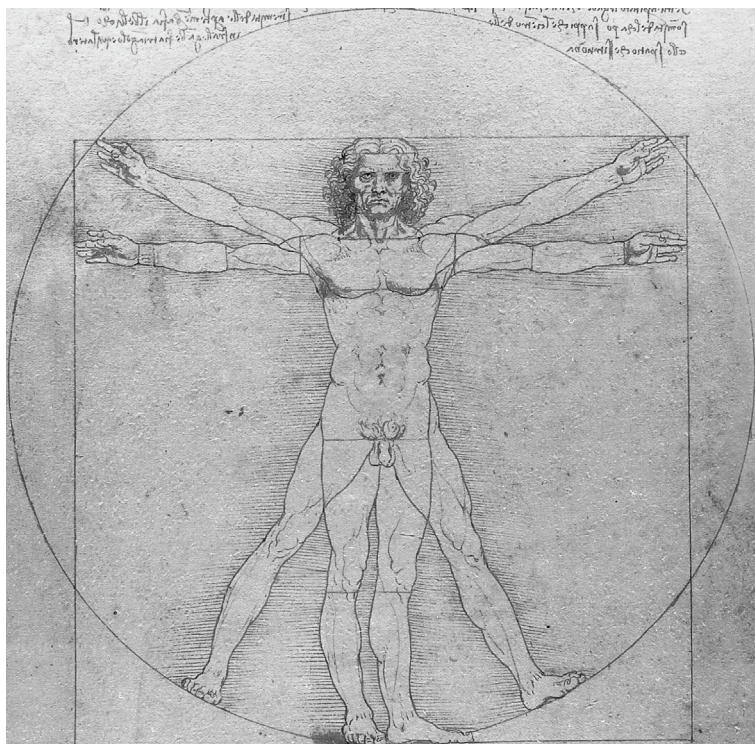


"I already live a very modest lifestyle for my income, so actually I didn't have to make any changes. My lifestyle is very much in line with my means. I don't have a car..."

Next Cut: "I have two children. I've already given up everything I can without starving to death."

- Carol Fontino

ALL PHOTOS LB WILLIAMS / OREDIGGER



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you were right.

Our eyes reconstruct the world based on neural assumptions. Because it's a computer-like symbol recognition process, we can't be completely positive that what we see is actually what exists.

I bet you're thinking, "Great. Seven plus one might not equal eight."

I'd have to (reluctantly) agree. Logically, since there is so much in existence that we don't understand, there is a possibility in which our "knowledge" could be changed.

There's no way we can even conceive how such a possibility could happen, but technically, we can't deny it *could*.

There's so much more to the world around us than we think there is. The first step to becoming aware of what there is and what there can be is to acknowledge the fact that there's more than what we know.

Obvious? Then why are we so path dependent?

We built a combustion engine over 100 years ago, and we almost exclusively use a fancy version of it today, wantonly wasting

Strive to express the abstract, the new, the creative, the bold, the emotive, the beautiful. Do more than accomplish the acceptable, unless you care only to survive.

If you say you're not an artist, then I reply that your statement only limits what you can create. You can be both, and anyone with free will has the ability to create the only requisite to being an artist.

Pure art has less of an impact on our world than does science,

but does that not mean that science has the potential to bring even more beauty to our world?

Separating art and science limits the potential of both. The advent of technology has allowed for the evolution of the arts. Aesthetics have combined beauty with engineering, human expression with human progression.

Has science ever been as elegant since Da Vinci died? Would someone so brilliant in so many

Editorials Policy

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Fool's Gold

“Fool’s Gold turns 2! Still single!



Geek of the Weak

...Isaac Newton, Deceased: Physics

Benjamin M. Weilert
(1 kg*m/s^2)

[Oredigger] When did you first realize you were a geek?

[Newton] Probably when I figured out calculus. Since no one had thought this stuff up yet, I figured I'd go ahead and get it out there so that it could frustrate many lesser minds for years to come. Still, I'd have to say that the defining moment was when my published work, Philosophiae Naturalis Principa Mathematica, became the most influential book in the history of science, according to Wikipedia.

Didn't Leibniz also develop calculus?

Not if I have anything to say about it.

What makes you a geek?

I'd have to say that I'm a geek because I can't stop studying science. Once I finish learning everything about a certain topic, I move on to the next one. I'll probably end up proving everything ever. Hell, I'm even more influential than Albert Einstein . . . whoever that is.

What is the geekiest item you own?

There's actually a few things. I have a fully working telescope that I made from scratch. The mercury I used to make it is what turned my hair white. Also, my collection of alchemy supplies is pretty geeky.

Why did you want to study alchemy?

Well, me and my brother wanted to bring back our dead mother, so we did some research into alchemy and gave it a shot. Unfortunately, it didn't quite work, so now my brother is a walking, talking suit of armor.

Windows or Mac?

It kind of depends what I'm working on. If I'm studying optics and light, I'll tend to use Windows, where as if I'm observing the forces of gravity inherent to our world, I'll end up using my Apple.

What do you do outside of Physics?

During my free time, I do some amateur natural philosophy and theology. I figure that they're both really close to Physics, since all three deal a lot with believing something that you can't see or touch.

Who is your role model?

I'd have to say that my scientific hero is Galileo Galilei, since he had an awesome beard.

Do you own any 20-sided die?

I'm actually a level 26 mage.

What is your best geek joke?

Heisenberg was driving along the highway, when a cop pulled him over. The cop said, "Sir, do you know how fast you were going?" Heisenberg replied, "No, but I knew exactly where I was."



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Sign “Chuckers” of Slate

Janeen Neri
Chuckalotaboss

Due to quietly mounting student interest, an unofficial Mines sign-chucking club formed last month. The purpose of the Sign Chuckers of Slate, as they call themselves is “to rid Slate Café (or at least my table) of all the cryptic, ugly, and demeaning table signs that are ‘approved for posting,’ by any means that will not result in immediate expulsion,” according to their mission statement.

The Slate Café signs, provided through a collaboration of Student Services and the Sign Committee Underwriters of Mines, are small, desktop-published messages such as “Binge and Score? NO! Stalk the girls? YES!” or “Reduce, Reuse, Recycle, Snuffleupagus,” and other inspiring catchphrases, which are then placed on each table to inspire the students. Some students, however; were less than inspired.

“The main tragedy of the Slate signs,” said Chief Chucker of SCS, Gordon Charles, “is their soulless murdering of that great

art. I speak, yes, of WordArt.” Indeed, the signs appear to feature gratuitous quantities of WordArt, though whether it was “murdered” or died of natural causes is up for debate.

Charles added, “Besides, the signs are kind of ambiguous. I mean, what are we supposed to think when the sign says, ‘99% of Mines students don’t even have time to drink, so this sign is completely useless and is swiftly killing trees, WordArt, brain cells, and zebra mussels. But anyway: don’t drink! A better use of your time is to scoop the still-beating hearts out of two dozen squirrels with chopsticks.’ Honestly, do we really want to send students the message that zebra mussels are less important than drinking?”

The members of the SCS club cite many other reasons for chucking signs; club rules state that no reasonable reasons for chucking will be denied. All methods of sign-chucking are accepted, from simply throwing the sign to another table or predating the removal date to dipping it in the bus tub, frying it on the wok, or full-scale races down the residence hall toilets. Membership is

open to all CSM students with a meal plan. “We welcome all potential chuckers,” said Charles, “we want to answer the age-old question: How many signs can the sign chuckers chuck if the sine of the initial velocity of the chucked sign has a positive sign? And what if the chucker’s name is Chuck?”

Student dies in Mammoth celebration

Mike Stome
Chief Lacrosse Expert

This past Saturday was special for many people for many reasons. First, it was St. Valentine’s Day and at over \$100 a dozen, the economy clearly didn’t hurt the rose business. Second, couples all over America celebrated their love with romantic dinners, an estimated 5,000 marriage proposals, or a pair of handcuffs and a safety word. Finally, Saturday was most important for the 10,000 Mammoth fans packed into the Pepsi Center to see a major win over the Calgary Roughnecks 13-12!

In a rough and tough game, the Colorado Mammoth came back from a 5 goal deficit at one point to take away Calgary’s undefeated season. There were big hits. There were big goals. There were big... dance numbers from the Wild Bunch cheerleaders. This game was a huge win for the Colorado Mammoth and it left the fans in a euphoric state as the game came down to the buzzer.

On Sunday, just after 1pm, Colorado School of Mines student and Mammoth fan, Justin Jagerstausenstein, passed away from a heart attack still in celebration of the Mammoth victory. Initial finding see the cause of death as a heart attack from acute burgeritis.

“It’s too weird,” commented friend of Justin, Kate Belinstiner, “Yesterday we were cheering on the Mammoth with our cowbells and crazy hair. Today, he’s hamburger meat.” Hamburger meat indeed, acute burgeritis is a condition where a person eats too many hamburgers in one sitting and the cholesterol in their blood vessels increase in density so quickly that it takes on the form of tiny burger-shaped blood clots in much the same way that a mass of grasshoppers suddenly turn into locusts. Simultaneous clotting all over the body ultimately leads to acute deadness.

What still remains in question is how is Justin’s death related to the Colorado Mammoth? Pepsi Center Public Relations Spokes-

woman, Tina McFallen, offered the fact that, “The Colorado Mammoth have a promotional deal with Good Times Burgers Corp. If the Mammoth score 13 goals, guests may turn their ticket in at a Good Times for a free Bambino. The promotion is intended to give fans one free Bambino; not an excessive amount like Mr. Jagerstausenstein.”

As it turns out, immediately after the Mammoth win against Calgary, Justin started sweeping the Pepsi Center stands for lost and discarded ticket stubs. He then went to Good Times the next day and ordered 238 free Bambinos. 173 Bambinos and 20 minutes later, acute burgeritis kicked in and Justin was dead.

Did the Colorado Mammoth kill Mr. Jagerstausenstein? Is lacrosse a heart-attack sport?

Justin’s parents refused to speak on record, but are clearly mad at both the Colorado Mammoth and Good Times burgers. They filed a civil suit against both organizations on Monday, but quickly withdrew it from the record for life-time season tickets and free burgers. Wake services will be held on Thursday at the Costco Chapel in Lakewood and will be catered by Good Times.

Colorado School of Mines counselors are available for all those under the influence of burgers.



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Hamburgers- America can’t get enough free burgers.

STANDARD DEVIATION BY KYLE SANDERS



—solution—

8	4	7	3	2	9	5	6	1
2	1	6	7	5	4	9	3	8
5	3	9	6	8	1	2	7	4
4	6	1	2	7	3	8	9	5
9	7	2	5	1	8	3	4	6
3	5	8	4	9	6	1	2	7
6	8	5	9	4	2	7	1	3
7	2	3	1	6	5	4	8	9
1	9	4	8	3	7	6	5	2

Puzzle by websudoku.com

from Issue 15

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Act One:
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INTRAMURAL
DEADLINES

Thurs. Feb 19th:
Billiards
Outdoor Soccer 11vs11
--Captain's Meeting Feb 22nd

Thurs. Feb 26th:
Badminton Doubles
Table Tennis Doubles

Wed. March 18th:
NCAA Pick'EM

Thurs. March 19th
Softball + Kickball

Hockey Wed. March 25 @ the Pepsi Center 4pm
-Tickets \$ 22; Good for the Avalanche Game
at 7pm on the same day